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Ex Parte

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

**Re: *Unlicensed Use of the 6 GHz Band, ET Docket No. 18-295;
Expanding Flexible Use in Mid-Band Spectrum between 3.7 and 24 GHz,
GN Docket No. 17-183***

Dear Ms. Dortch:

NCTA – The Internet & Television Association (NCTA) represents a broad swath of companies who expect to use spectrum in the 6 GHz band to deliver next generation broadband services over Wi-Fi, as well as incumbent licensees who are entitled to protection both from harmful interference and from vague plans to clear their spectrum and relocate them to new bands. NCTA appreciates the Commission’s recent efforts to keep pace with consumer demand and enable next-generation wireless technologies by proposing to designate significant new mid-band spectrum resources for licensed and unlicensed use. As the Commission proceeds with two important mid-band spectrum auctions this year—which will open 350 MHz of spectrum for licensed use—it can build on that momentum to deliver substantial economic value and space for innovation by also opening valuable mid-band spectrum for unlicensed use.

The propagation and significant bandwidth available in the 6 GHz band make it essential for the growth of unlicensed technologies like Wi-Fi as they continue to carry a majority of Internet traffic and support 5G services. However, the Commission has not made available any new mid-band spectrum for unlicensed use since 2003. Allowing unlicensed users to share the 6 GHz band while protecting existing incumbents is the fastest way to increase the efficient use of the band and unleash unparalleled unlicensed innovation, particularly through Wi-Fi 6, Wi-Fi 7—which is already in development—and future generations. Because Wi-Fi and other unlicensed technologies would have to share the spectrum while protecting incumbent operations from harmful interference, this approach would avoid the unnecessary complications and delay to technological advancement associated with clearing and auctioning the band.

The United States needs more unlicensed spectrum in the near term and cannot afford to delay unlicensed access to half of the 6 GHz band in order to consider an ill-conceived, last

minute push by CTIA to auction the upper frequencies. Wi-Fi is an integral technology not just for home and enterprise connectivity, but also for schools and libraries, ports and railyards, precision agriculture, and industrial automation. For years, Wi-Fi has also supported significant offload of traffic from mobile networks. Next-generation Wi-Fi technology is here: NCTA's members have debuted Wi-Fi 6 access points, leading smartphone manufacturers have incorporated the technology,¹ and the market expects a deluge of new Wi-Fi 6 devices in the near term.² But all of this technology relies on access to wide swaths of contiguous unlicensed spectrum, in 160- and 320-megahertz channels, to support greater Wi-Fi capacity and faster speeds, and American consumers do not have access today to sufficient unlicensed spectrum resources to deliver those capabilities. Existing unlicensed spectrum resources also will not be enough to support the 71 percent of 5G traffic that Cisco expects will be offloaded to Wi-Fi by 2022.³ Consequently, failing to make sufficient mid-band unlicensed spectrum available will compromise our connected future.

Remaining a world leader in next-generation wireless technology will require that the United States designate a significant amount of unlicensed mid-band spectrum to support deployment of wide-bandwidth Wi-Fi 6. In fact, a study by Quotient Associates for the Wi-Fi Alliance states that up to 1600 megahertz of additional unlicensed spectrum is needed by 2025 to support the tremendous amounts of data expected to traverse these networks.⁴ The industry has already responded to the anticipated increase in demand by developing Wi-Fi standards to more efficiently use spectrum and deliver faster speeds. Wi-Fi 6 will use 160 megahertz channels to enable up to 10-gigabit speeds and support more data-intensive applications, and Wi-Fi 7 is already in development and considering using 320 megahertz channels to expand on those capabilities, making augmented and virtual reality (AR and VR) applications more accessible to businesses, healthcare providers, schools, and consumers. CTIA's proposal to auction half of the critical 6 GHz band to a select few carriers would significantly undermine the value of Wi-Fi, be a setback for domestic spectrum policy, and be inconsistent with global harmonization efforts. Moreover, CTIA's filing demonstrates that its proposed approach to relocating 6 GHz incumbents is far from complete and would deprive American consumers of access to the band for more than a decade, while creating uncertainty for incumbent operations in the band. In contrast, allowing unlicensed users—specifically, low-power indoor operations—to share and

¹ Cisco, *The Road to Wi-Fi 6* at 1, <https://www.cisco.com/c/en/us/products/collateral/wireless/e-nb-06-preparing-for-wifi-6-ebook-cte-en.pdf>.

² *Wi-Fi 6 Devices set to exceed 50% of CPE market in 2024*, ABIresearch (Sept. 17, 2019), <https://www.abiresearch.com/press/wi-fi-6-devices-set-exceed-50-cpe-market-2024/>.

³ Broadcom, *Wi-Fi in the 5G Era* at slide 24 (2019), available at https://newamericadotorg.s3.amazonaws.com/documents/Wi-Fi_in_the_5G_Era_-_Broadcom_presentation.pdf.

⁴ See Steve Methley & William Webb, Quotient Associates Ltd., *Wi-Fi Spectrum Needs Study* at 26 (2017), https://www.wi-fi.org/downloads-registered-guest/Wi-Fi%2BSpectrum%2BNeeds%2BStudy_0.pdf/33364 (Wi-Fi Needs Study).

access the full 1200 MHz of the band would allow incumbents to safely continue to operate in the band and not require displacing them. Additionally, the Wi-Fi industry, including NCTA's members, is ready to roll out its next generation Wi-Fi 6 equipment this year, so unlicensed spectrum will bring the benefits and value of 6 GHz spectrum to consumers much faster than CTIA's undeveloped proposal. The Commission should therefore reject CTIA's call for delay and move forward quickly to enable unlicensed access across the 6 GHz band.

There Is No Plan to Internationally Harmonize 6 GHz for Exclusive, Licensed Mobile Use as CTIA, China, and Huawei Have Advocated. The claim that clearing and auctioning half of the 6 GHz band would be “more consistent with global developments”⁵ is entirely at odds with international harmonization efforts at the International Telecommunication Union (ITU) and with the activities of individual countries and regions that are leading the world in wireless technology. At the recent ITU World Radiocommunication Conference (WRC-19), China and Huawei led the charge for studies on licensed use in 6 GHz, at odds with the U.S. position at WRC-19, many European countries, and the rest of the Asian region.⁶ As Ambassador Grace Koh, U.S. Representative and Head of Delegation to WRC-19, recently noted, “Huawei and Erickson [sic] . . . wanted to see the 6 GHz band studied for mid-band 5G . . . [and] it was a big push from China whenever I met with them on a bilateral basis.”⁷ Ambassador Koh went on to note, “I didn't see a huge amount of interest from the European countries individually. There was no interest in identifying 6 gigahertz for 5G in our America's region.”⁸ Although there is a Region 1 (Europe, Africa, Middle East) study item to look at the upper 6 GHz band (6.425–7.025 GHz) for shared mobile use over the next four years, European countries did not support studying licensed mobile use of the 6 GHz band; the Region 1 study largely was approved because of African interest.⁹ And neither the Region 1 study nor the global study of the 7.025-7.125 GHz band for licensed mobile use is consistent with CTIA's plan to clear the upper 6 GHz band of incumbent operations and license it for exclusive use. ***There is no international study***

⁵ Letter from Scott K. Bergmann, Senior Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, ET Docket No. 18-295, GN Docket No. 17-183, at 4 (filed Feb. 24, 2020) (CTIA Letter).

⁶ See Interview by Scott Wallsten and Sarah Oh, Tech. Policy Inst., with Ambassador Grace Koh, U.S. Rep. and Head of Delegation to the Int'l Telecomm. Union World Radio Comm'n Conf. 2019, Technology Policy Institute Two Think Minimum Podcast (Feb. 10, 2020), <https://techpolicyinstitute.org/2020/02/10/ambassador-grace-koh-on-wrc-19-and-spectrum-for-5g-two-think-minimum>.

⁷ *Id.*

⁸ *Id.*

⁹ See *id.* (“What did happen was that Huawei and Ericsson were not successful and China were not successful in getting the entire 6 gigahertz ban[d] studied for 5G. . . . What we're finding is that that upper chunk of the 6 GHz band, is only being studied for 5G identification in Region 1. That's largely because of the African push I think to want to find some spectrum for 5G. . . . I think that they do use a lot of Huawei equipment and so I think it makes sense for them to want to see if that's a viable place to be.”).

item for clearing the upper part of the 6 GHz band for licensed use. Instead, the 6 GHz study items at the ITU contemplate licensed users sharing spectrum with existing incumbents,¹⁰ much as 5G NR-U operations would be able to share 6 GHz spectrum under the Commission’s proposal to designate the band for unlicensed use.

Europe intends to make the lower part of the 6 GHz band available for unlicensed use this year.¹¹ If it intended to license the upper part of 6 GHz for exclusive mobile use, CEPT would have received a mandate from the European Commission to study the feasibility of mobile use in the upper 6 GHz, as it did for unlicensed use in the lower frequencies. It has not. Moreover, the latest version of CEPT’s *5G Roadmap* excludes 6 GHz, demonstrating that the EU does not intend to consider 5G deployments in any part of the 6 GHz band at this time.¹² To the contrary, informal conversations between cable industry suppliers and European regulators suggest that Europe is interested in studying unlicensed use of the upper portion of the band in next few years. A variety of individual European countries, including France, Germany, Norway, and Sweden, “strongly opposed” a proposed European study item for mobile use of the 6425 MHz to 7125 MHz band.¹³ In short, our European allies do not adhere to the CTIA/China plan to auction a portion of these important mid-band frequencies.

¹⁰ See Int’l Telecomm. Union [ITU], *Results of the first session of the Conference Preparatory Meeting for WRC-23 (CPM23-1)*, Administrative Circular CA/251, at Annex 7, p. 22 (Dec. 19, 2019) (regarding Agenda Item 1.2 for WRC-23, inviting the ITU-R “to conduct and complete in time for WRC-23 the sharing and compatibility studies, *with a view to ensuring the protection of services to which the frequency band is allocated on a primary basis, without imposing additional regulatory or technical constraints on those services, and also, as appropriate, on services in adjacent bands, for the frequency bands . . . 7 025-7 125 MHz (globally) [and] 6 425-7 025 MHz (Region 1)*” (emphasis added)).

¹¹ CEPT Elec. Commc’ns Comm., *Europe prepares to harmonise the 6 GHz spectrum band for Radio Local Area Networks*, ECC Newsletter (Aug. 2019), <http://apps.cept.org/eccnews/aug-2019/europe-prepares-to-harmonise-the-6-ghz-spectrum-band-for-radio-local-area-networks.html>; Claus Hetting, *Europe’s process to release 6 GHz spectrum to Wi-Fi on track, expert says*, Wi-Fi NOW (June 20, 2019), <https://wifinowglobal.com/news-and-blog/europes-process-to-release-6-ghz-spectrum-to-wi-fi-on-track-expert-says/>.

¹² See generally CEPT Elec. Commc’ns Comm., *CEPT 5G Roadmap*, ECC(20)020, v.10 (Feb. 21, 2020, rev. Mar. 6, 2020), available at <https://cept.org/ecc/groups/ecc/client/meeting-documents>.

¹³ Reply Comments of Hewlett Packard Enterprise, ET Docket No. 18-295, GN Docket No. 17-183, at 7 (filed Mar. 18, 2019) (“[S]even European administrations including France, Germany, Norway and Sweden ‘strongly oppose[d] . . . the adoption of the proposed NWI [new work item] for MFCN [mobile/fixed communications networks] in the band 6425 MHz to 7125 MHz.’” (quoting ETSI, *System Reference document (SRdoc); Wireless access systems including radio local area networks (WAS/RLANs) in the band 5925 MHz to 6725 MHz* (Oct. 2018),

CTIA’s Plan for Relocating Incumbent 6 GHz Users to the 7 GHz Federal Band Is Riddled with Problems. CTIA appends to its letter a report by Comsearch purporting to demonstrate that “‘large-scale relocation of 6 GHz assignments into 7/8 GHz, to operate along with the approximately 9000 federal assignments, appears feasible,’ with a projected relocation cost to the new licensees of \$2.8 billion.”¹⁴ But the Comsearch Report is riddled with flaws that render its relocation analysis unreliable. First, the report advances no plan for addressing the important temporary/mobile users that currently rely on U-NII-8 spectrum. As NCTA has discussed, its members operate important mobile news gathering and other television content production links in the 6 GHz band that must be protected.¹⁵ Simply assuming that Federal Government users and broadcast auxiliary service (BAS) licensees can easily set up a “system of local coordination” that would allow BAS to share government spectrum for these temporary/mobile uses is not a viable plan.¹⁶ Moreover, the report’s cost estimates for relocation exclude include temporary and mobile users.¹⁷ A relocation plan that does not address the needs of all incumbent users and excludes significant use cases from estimated relocation costs lacks substance and cannot be relied upon. In contrast, the Commission can both enable wireless broadband access to 6 GHz spectrum and allow incumbent users to continue their operations in their current spectrum, fully protected from harmful interference, if it opens up the band for shared unlicensed use.¹⁸

Second, the analysis relies on information about the Federal Government’s usage of the 7.125-8.4 GHz band that is twenty years out of date.¹⁹ Spectrum usage in the private sector has changed considerably in twenty years and Federal use could easily have increased in that time as well. That would be particularly problematic when one considers that the Comsearch Report

https://www.etsi.org/deliver/etsi_tr/103500_103599/103524/01.01.01_60/tr_103524v01010p.pdf)).

¹⁴ CTIA Letter at 1-2.

¹⁵ *See, e.g.*, Letter from Danielle J. Piñeres, Vice President & Associate General Counsel, NCTA – The Internet & Television Association, to Marlene H. Dortch, Secretary, FCC, ET Docket No. 18-295, GN Docket No. 17-183, at 2 (filed Aug. 9, 2019).

¹⁶ CTIA Letter at Attachment pp. 34-35 (hereinafter Comsearch Report).

¹⁷ Comsearch Report at 54 (“Temporary fixed and mobile licenses have not been included in this study.”).

¹⁸ *See* Letter from Elizabeth Andrion, Senior Vice President, Regulatory Affairs, Charter Communications, and Rob Alderfer, Vice President of Technology Policy, CableLabs, to Marlene H. Dortch, Secretary, FCC, ET Docket No. 18-295, GN Docket No. 17-183, at 3-4 & Attachment (filed Feb. 21, 2020); *see also* Letter from Chris Szymanski et al., Director, Product Marketing and Government Affairs, Wireless Communications and Connectivity Division, Broadcom Inc., to Marlene H. Dortch, Secretary, FCC, ET Docket No. 18-295, GN Docket No. 17-183 (filed Feb. 28, 2020).

¹⁹ Comsearch Report at 27, n.10.

suggests accommodating 78 percent of the fixed links operating in U-NII-7 and U-NII-8 today into the Federal 7.125-8.4 GHz band.²⁰

Third, the Comsearch Report suggests that, in addition to the Federal 7.125-8.4 GHz band, some fixed 6 GHz incumbents could be moved to the 11 GHz, 18 GHz, or 13 GHz bands.²¹ As the report acknowledges, the propagation in those bands is significantly worse than at 6 GHz, limited by fading, and likely not suitable for many fixed operations.²² The *Emerging Technologies* framework that CTIA suggests the Commission could rely on to auction the upper 6 GHz frequencies depends upon offering comparable replacement facilities that allow incumbents to maintain at least equivalent service in terms of throughput, reliability, and speed.²³ It would be a high bar indeed to show that these much higher frequencies, with associated propagation challenges, could support users that enjoy the 6 GHz band today at an equivalent level of service.

CTIA's Approach Would Delay Wireless Broadband Access to 6 GHz By a Decade.

Unlicensed devices are in development that could bring the 6 GHz band to American consumers this year, if the Commission moves forward to enable robust unlicensed access to the band. CTIA's proposed approach would keep devices capable of accessing the upper 6 GHz band out of American hands for a more than a decade. CTIA would relocate the majority of upper-6 GHz fixed links to a federal government band that has not been studied for shared use and for which there is no non-federal allocation. Studying the federal band for shared use, completing the necessary Commission processes, and ultimately auctioning the band and relocating existing users could take more than a decade. In fact, CTIA has said that, on average, it takes 13 years to repurpose a band for exclusive licensed wireless use.²⁴ With existing unlicensed spectrum resources approaching exhaustion due to rapidly growing data demands from consumers and businesses across industries, the need for more wireless broadband spectrum is urgent. The Commission has an unprecedented opportunity in the 6 GHz band to quickly put next-generation

²⁰ See *id.* at 56.

²¹ *Id.* at 32-33.

²² See *id.*

²³ See *Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies*, Third Report and Order and Memorandum Opinion and Order, 8 FCC Rcd. 6589, 6603 ¶ 36 (1993) (“[I]n any case brought to the Commission for resolution we will use as our benchmark that comparable facilities must be equal to or superior to existing facilities. To determine comparability we would consider, inter alia, system reliability, capability, speed, bandwidth, throughput, overall efficiency, bands authorized for such services, and interference protection.”).

²⁴ Testimony of Scott Bergmann, Vice President, Regulatory Affairs, CTIA, *Facilitating the 21st Century Wireless Economy: Hearing Before the Subcomm. on Comm'n's and Tech. of the H. Comm. on Energy and Commerce*, at 8 (Apr. 5, 2017), <https://www.congress.gov/115/meeting/house/105841/witnesses/HHRG-115-IF16-Wstate-BergmannS-20170405-U3.pdf>.

wireless capabilities to work for American consumers and cannot afford to let it pass. It should not change course now and delay these benefits.²⁵

We therefore encourage the Commission to reject CTIA's late-breaking efforts to obstruct the well-supported path toward unlicensed access in the 6 GHz band that also protects incumbent users. Sufficient mid-band frequencies to support unlicensed use are key to preserving U.S. leadership in the use and delivery of wireless broadband. If the Commission leads the way with an Order this spring authorizing low-power indoor unlicensed users to share the entire 1200 megahertz, over the objections of Huawei, China, and CTIA, NCTA is confident that American consumers will be the primary beneficiaries of ultra-fast broadband connectivity reaching across the country, and 6 GHz will become the internationally harmonized home for next-generation Wi-Fi.

Sincerely,

/s/ Danielle J. Piñeres

Danielle J. Piñeres

²⁵ See Ajit Pai, Chairman, FCC, Remarks at the National Union Building on the New 5.9 GHz Band Proposal (Nov. 20, 2019) ("Wi-Fi's popularity has raised a challenge for regulators: We need to make more spectrum available for unlicensed use. Indeed, to meet growing consumer demand, it's estimated that the U.S. will need to allow unlicensed use of up to 1.6 GHz of new mid-band spectrum by 2025."); *Use of the 5.850-5.925 GHz Band*, Notice of Proposed Rulemaking, 34 FCC Rcd. 12,603, at Statement of Commissioner Jessica Rosenworcel (2019) ("Right now, there are over 9 billion Wi-Fi enabled devices. But billions and billions of more devices are coming our way with the internet of things. On top of that, we know that as much as 70 percent of 5G traffic will be offloaded to Wi-Fi. Add this up, and we will need a significant swath of new unlicensed spectrum to keep up with demand.")